

Theater Forecast Unit Forecast Review

Date: 27 JULY 00 Regime: BAIKAL LOW Forecaster:WEAVER/BARCELON

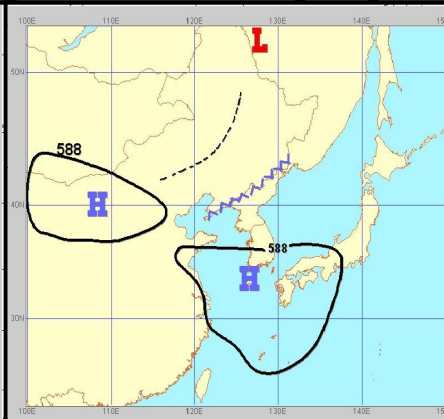
Reason for review: HEAVY PRECIPITATION AT OSAN AB A

Synoptic Situation

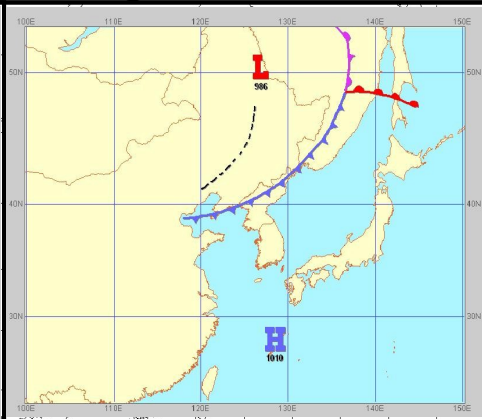
Include heights/pressures, isotherms, trofs, ridges, pressures/height centers and values



200 MB: 21 JULY /12 Z



500 MB: 21 JULY /12 Z



Surface: 21 JULY /12 Z

Initial Forecast Reasoning:

On Friday, 21 July, The peninsula was under the influence of a Baikal Low with a cold front extending from Manchuria to the border of nKor. The 300 Mb analysis showed a 120 kt jet max over central Mongolia supporting the mature wave north of Korea. At 500 Mb, the shortwave trough located in Manchuria supporting the surface low had deepened 3 degrees in 12 hours to an amplitude of 8 degrees. An upper level high (reflection of the subtropical ridge) was located south of Cheju at 592DM, heights had remained constant over the past 12 hours, but the high center had shifted SW 4 degrees. The cold front, located on the China/nK border at 12Z, was moving into a mT airmass with precipitable water values of 2.3 and SSI of -.9 on the 1200Z, Osan sounding.

The initial forecast called for the front to move south, to a position north of the DMZ by 22/00Z. However, during the night, weak diabetics (diurnals) and increased divergence aloft caused the front to undergo frontogenesis and quickly advance to a position south of Seoul by 21/21Z. At this point, an AWA for 2" in 12 Hours time phased over the entire peninsula and point warnings for 2 ID were issued. The 2" AWA versus the 5" AWA was issued due the fact the front was moving faster than forecast. At approximately 0800L on Saturday 22 July the point warnings for heavy precip was issued for Osan and Camp Humphrys.

Post Analysis

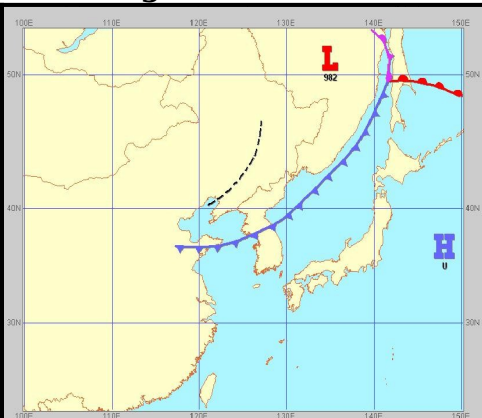
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200 MB: 22 JULY /00 Z



500 MB: 22 JULY /00 Z



Surface: 22 JULY /00 Z

Post Analysis Reasoning:

Upon assuming shift at 22/0100Z IR satellite imagery indicated a short wave ridge over the northern west sea had begun to interact with the frontal boundary weakening the convection over that area due to weak convergence aloft. However another shortwave trough (minor perturbation with an amplitude of 5 degrees) was moving into the base of the longwave trof which allowed the front to undergo frontogenesis when it was located over the central peninsula. After receiving the 00-12hr forecasts of the NOGAPS model run a heavy precipitation checklist was run using this data. The jet axis was over North Korea, the 500mb trof was west of the peninsula over the eastern west sea, the shortwave ridge axis was over the east sea, and the axis of maximum moisture advection was right over the peninsula with pre-frontal gradient winds of 35 knots. This analysis combined with the knowledge that the base of the longwave trof was filling due to subgradient wind condition caused by the 120kt jet max exiting the base of the long wave trof and the steering flow was becoming more westerly. This caused the front to become quasi-stationary over the central peninsula. After making this determination about the front, a conference call was initiated with the all the CWT's on the peninsula to discuss the potential of heavy precipitation at their respective locations and request possible accumulation estimates. After receiving input, the 0250Z the Area Weather Advisory for greater than 5 inches of rain in 24 hours was issued , with a maximum accumulation of 6 inches in locally heavy rainfall.

Lessons Learned:

With the jet max still in Mongolia and the first shortwave already off the peninsula by 22/00Z, I should have realized the longwave trough would not deepen further and CAA associated with the front would not continue to move south, but east. The next shortwave was still upstream in Manchuria and closer inspection would have revealed that that shortwave would interact with the front and produce heavy precipitation over the area were the interaction would take place. With the unstable and tropical airmass in place, the 5" AWA would have been an easy decision to make.

Furthermore, the Camp Humphery's WSR-88D was not working at this time, and the Kunsan radar was being used. This radar is over 150 Nm away from the DMZ, so we were at a distinct disadvantage during this event.

Osan's warning criteria for precipitation is only 2 inches in 12 hours. Consequent warnings for Osan had maximum forecast accumulations appended in the text of the warning. The AWA had Osan in a 5" AWA. We should have included a maximum forecast value on the first warning. Our procedures state that we provided a maximum forecast value on warnings. This was an oversight by our Osan TAF Cell forecaster.

TFU Operations NCOIC:	OP Superintendent: Another short term tool that proved useful was the KMA 3hrly precip product. Timing and locations were right on. Teams used during event. Gcc	OP Chief: We had a mT airmass interact with a strong baroclinic system. This is an explosive situation. Should think heavy precip automatically. Td
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